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ABSTRACT

This study was designed to investigate whether or not degree of child maltreatment is related in some meaningful way to the interactional characteristics of the mother/infant dyad and to the infant's developmental status. A group of 53 mother/infant dyads was divided into five diagnostic groups: nonaccidental trauma combined with failure-to-thrive, nonaccidental trauma combined with iron-deficiency anemia, nonaccidental trauma only, neglect only, and normal controls. During a feeding session, qualitative differences were found in the relational characteristics of dyads in which multiple forms of child maltreatment existed. Developmental examinations revealed that infants subjected to severe abuse and neglect were significantly retarded in their mental and motor development, as compared to the remaining index and control groups. The results were interpreted to suggest that relational disturbances are at the core of the problem of infant maltreatment and that on the basis of interactional symptomatology, two broadly different clinical conditions may be identified. (Author/MP)

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INFANT ABUSE, NEGLECT, AND FAILURE-TO-THRIVE: MOTHER-INFANT INTERACTION

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ABSTRACT

A group of 53 mother-infant dyads, divided into five diagnostic groups (non-accidental trauma combined with failure-to-thrive, non-accidental trauma combined with iron-deficiency anemia, non-accidental trauma only, neglect only, and normal controls) were observed during a feeding session. Qualitative differences were found in the relational characteristics of dyads in which multiple forms of maltreatment existed. Developmental examinations revealed that infants subjected to severe abuse and neglect were significantly retarded in their mental and motor development compared to the remaining index and control groups. The results were interpreted to suggest that relational disturbances are at the core of the problem of infant maltreatment and that on the basis of interactional symptomatology, two broadly different clinical conditions have been identified.

INTRODUCTION

The past 25 years have witnessed an increasing number of studies and theoretical papers dealing with the topic of "high-risk" infants and children. Much of this research has focused on abused, neglected and failure-to-thrive children and their families.

Scientists and practitioners alike have drawn freely from a number of psychiatric and social psychological theories in an attempt to develop a model of the phenomenon of child maltreatment. Etiological constructions have ranged from simple unitary causal models to extremely complex ecological and transactional models. The development of more complex psychosocial models of abuse and neglect has led researchers to develop increasingly more complicated research strategies. While this trend represents a step beyond early "simplistic" unicausal models, investigators in the area might do well to pause and consider what child abuse and neglect 'is' at its very core--that is, to stand aside, if only briefly, from the frequently empty, catch-all phraseology of "complexly determined" and take a more manageable but not necessarily shallower view.

It is our contention that, regardless of the relative contribution of peripheral psychosocial or ecological variables, child abuse and neglect represents essentially a breakdown in caretaker-infant interaction. This point may seem obvious, even conceptually redundant to some, but until recently the actual ongoing interactions in such dyadic units were not considered to be valuable sources of data.

We hypothesized that since an interactional disturbance was at the core of the problem of infant maltreatment, there will be a systematic relationship among the degree of observed interactional disturbance, developmental status, and the severity

of maltreatment as diagnosed and defined in this study.

In order to explore this proposition, we needed to differentiate "levels of maltreatment". Frequently, investigators combine in a single maltreatment group infants who have suffered very different levels of parenting failure. For example, researchers have been known to aggregate in one sample infants who have been subject to physical assault, nutritionally or emotionally neglected infants, those who have been both abused and neglected, and victims of sexual abuse. This has made the results of these studies somewhat difficult to interpret. Also, heterogeneous groups tend to reduce the power of a particular investigation, masking the extent and limits of parenting failure.

METHODOLOGY

A total of 53 subjects were separated into 5 diagnostic categories: (1) infants determined to have both non-accidental trauma and failure-to-thrive (NAT/FTT); (2) infants determined to have suffered non-accidental trauma without significant growth failure, but who are still afflicted with iron-deficiency anemia as indicated by hemoglobin concentrations below 9.9gms./100ml. (NAT/IDA); (3) infants subject only to non-accidental trauma (NAT); (4) infants suffering from neglect only as determined by weight, general health, and physician's probabilistic diagnosis (NEG) and (5) control group infants determined to have neither significant growth failure nor non-accidental trauma (CON). Table 1 summarizes descriptive data and selection criteria for index and control infants. Most of the physically abused infants had, in general, suffered severe injuries with multiple traumata in 61.3% of the cases. Maternal socio-economic status, age, gravidity, and parity were not significantly different among the samples.

The interactional measure was an analysis of a feeding session. The coding scheme used was the Egeland et al. Feeding Behavior Rating Scale. Infants were assessed just prior to the interactional sequence using the Bayley Scales of Infant Development, mental and psychomotor indices.

RESULTS

In order to meaningfully condense the number of coding categories, a factor analysis with oblique rotation was carried out on data for the 21 interactional variables collected from the entire sample of mothers and infants. Table 2 shows that three interpretable factors which stress the dyadic nature of the interaction emerge from the feeding behavior rating scale data set. We named these factors: (I) Mutual Engagement, (II) Infant's Disposition for Interaction, and (III) Mutual Attentiveness.

Exact factor scores for each of the three factors were calculated from the rotated factor pattern matrix for each dyad in the investigation. Figure 1 gives the mean factor scores for each diagnostic group. Differences between means were significant only for Factor I (Mutual Engagement), F (4,48) = 7.36, $p < .001$. The linear trend was also significant, F (1,48) = 20.92, $p < .001$. In Factor I we have a clearly dyadic variable which illustrates that the degree of mutual interactional engagement was poorest in groups most at risk. However, it seems clear from the negative results for Factor II (Infant's Disposition for Interaction) that differences in maternal handling more than infant behavior contributed to this finding.

A closer examination of the pattern of results obtained for the Mutual Engagement factor suggests that a simple quantitative linear model may be somewhat inadequate for representing the variance in feeding behavior across diagnostic groups. NAT/FTT and NAT/IDA infants and mothers clearly displayed the least mutual interactional engagement of all. That is, these groups appeared qualitatively different from the rest of the index samples. A Newman-Keuls a posteriori test revealed that only NAT/FTT and NAT/IDA dyads were significantly different from CON mothers and infants at an alpha level of .05. The NAT and NEG groups did not significantly differ from the CON group.

Figure 2 shows the mean standard developmental scores for each diagnostic group. Bayley mental and motor indices are presented. Differences between group means for the Bayley mental index were statistically significant, F (4,48) = 2.98, $p < .05$, as was the linear trend, F (1,48) = 9.61, $p < .01$. Differences between means for the Bayley motor index were also statistically significant, F (4,48) = 2.63, $p < .05$, as was the linear trend, F (4,48) = 7.61, $p < .01$.

In these data we see once again that there are qualitative features which warrant attention. In particular, NAT/FTT infants displayed severe developmental delays. For both mental and motor developmental indices, only the NAT/FTT group achieved an average score of more than two standard deviations below the Bayley standardized mean of 100 points. Indeed, a post-hoc analysis (Newman-Keuls) showed that means for Bayley mental and motor indices were not significantly different among the remaining index and control groups.

DISCUSSION

The fundamental issue that this investigation has attempted to address is whether or not the degree of child maltreatment is related in some meaningful way to the interactional characteristics of the mother-infant dyad and the infant's

developmental status.

In general, the results of this investigation supported the hypothesized continuum of infant s at risk. In terms of the interactional data, the Mutual Engagement factor (Factor I) best accounted for these differences. However, it was also discovered that a simple quantitative linear model was inadequate to fully account for the degree of interactional difficulties encountered among dyads in which both physical abuse and neglect occurred. Here, some important qualitative distinctions were necessary. Thus, dyads in which multiple forms of maltreatment existed manifested more severe interactional disturbances.

Analysis of the Bayley data revealed a clear difference between NAT/FTT infants and the rest of the study samples. These data seem to indicate that in the absence of extremely severe maltreatment, serious delays in early infant mental and psychomotor functioning may not occur.

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TABLE 1

DESCRIPTIVE DATA AND SELECTION CRITERIA FOR INFANTS IN INDEX AND CONTROL SAMPLES

Group	N	Age(mo.)	Race	Sex	Birthweight(gm.)	Gestation(wk.)	Criteria
NAT/FTT	8	$\bar{X}$= 4.6 SD= 2.0	87.5%B 12.5%W	50%F 50%M	$\bar{X}$= 3147 SD= 462	$\bar{X}$= 38.7 SD= 1.4	1. <12 months 2. Full term 3. <3% for weight 4. No organic FTT 5. Physical abuse
NAT/IDA	5	$\bar{X}$= 4.6 SD= 1.1	60.0%B 40.0%W	40%F 60%M	$\bar{X}$= 3101 SD= 250	$\bar{X}$= 40.0 SD= 0	1. <12 months 2. Hemoglobin than 9.9gms./100ml. 3. Physical abuse
NAT	12	$\bar{X}$= 5.5 SD= 2.4	92.7%B 8.3%W	50%F 50%M	$\bar{X}$= 2982 SD= 646	$\bar{X}$= 38.3 SD= 2.8	1. <12 months 2. Physical abuse
NEG	6	$\bar{X}$= 4.6 SD= 2.1	80.0%B 20.0%W	50%F 50%M	$\bar{X}$= 2608 SD= 714	$\bar{X}$= 37.6 SD= 3.3	1. <12 months 2. Neglect 3. <3% for weight
CON	22	$\bar{X}$= 5.6 SD= 3.1	81.8%B 18.2%W	50%F 50%M	$\bar{X}$= 2967 SD= 596	$\bar{X}$= 38.5 SD= 1.6	1. <12 months 2. Emergency admission
		F(4,48)=.59,NS			F(4,48)=.83,NS	F(4,48)=.90,NS	

TABLE 2

FACTOR LOADINGS FOR THE EGELAND FEEDING BEHAVIOR RATING SCALE

Variable	Factor I	Factor II	Factor III
	Mutual Engagement	Infant's Disposition for Interaction	Mutual Attentiveness
Synchronization of feeding rate	.96	.01	-.26
Facility in caretaking	.95	.15	-.17
Response to crying or other distress	.94	.03	-.20
General sensitivity	.93	.04	-.01
Mother's delight	.81	.07	.25
Quality of verbalizations	.80	-.23	.09
Responsiveness to infant's interactions	.79	-.04	.21
Attitude towards feeding	.76	.04	.34

TABLE --Continued

Variable	Factor I	Factor II	Factor III
	Mutual Engagement	Infant's Disposition for Interaction	Mutual Attentiveness
Positive regard	.75	-.08	.29
Negative regard	-.64	.02	-.16
Expressiveness	.62	-.10	.46
Responsiveness to mother's interactions	.58	.49	.13
Cuddling by infant	.51	-.17	.34
Social behavior of infant	.50	.51	.02
Infant temperament	.49	.72	.01
Functional handling	.32	-.70	-.18
Non-functional handling	.40	-.57	.10
Infant muscle tone and control	.43	-.18	.06

TABLE --Continued

Variable	Factor I	Factor II	Factor III
	Mutual Engagement	Infant's Disposition for Interaction	Mutual Attentiveness
Mother's verbalizations	-.04	.31	.75
Mother's looking at infant	.05	.12	.66
Looking at mother's face	-.04	.32	.53

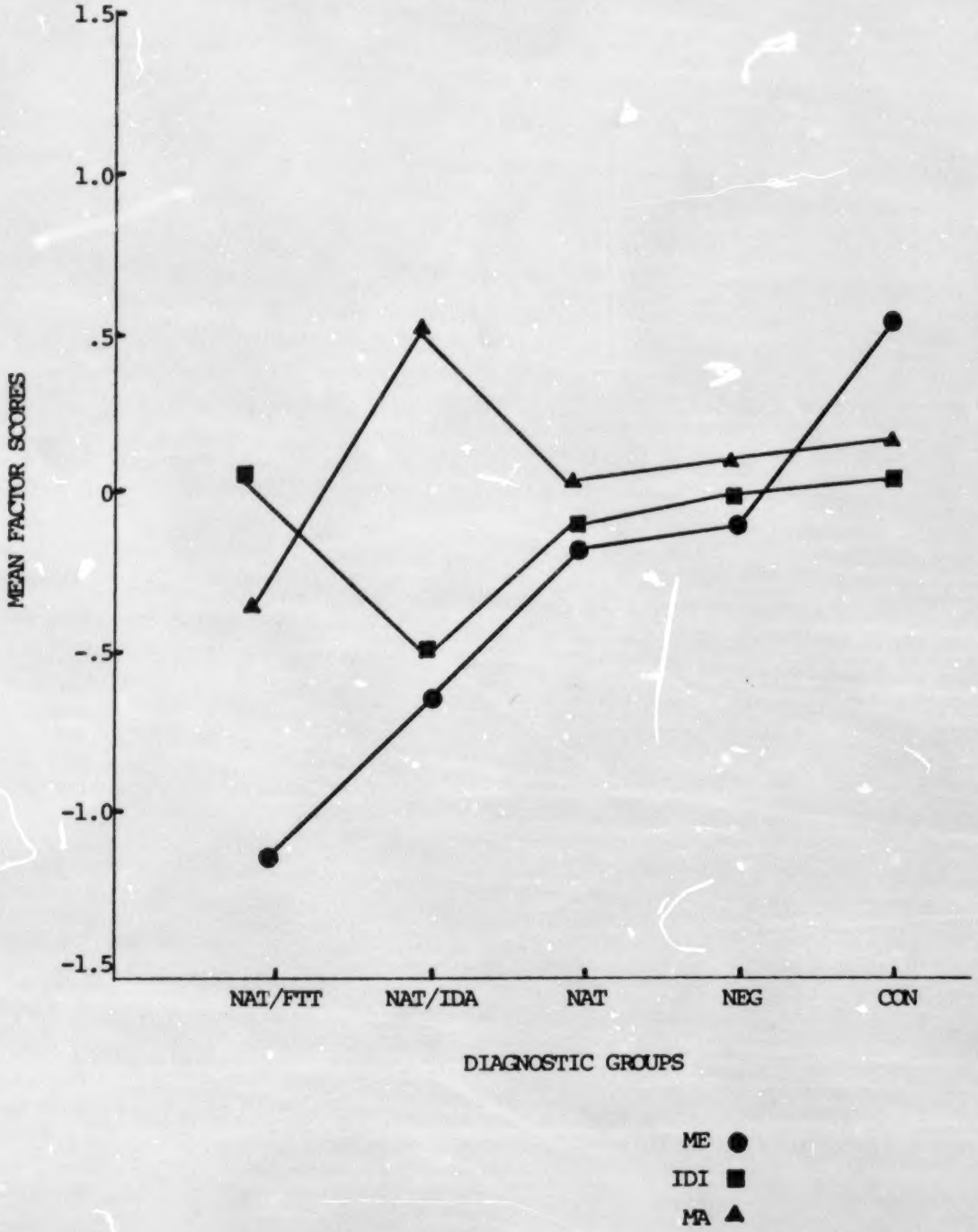

Figure 1. Mean Factor scores for diagnostic groups.

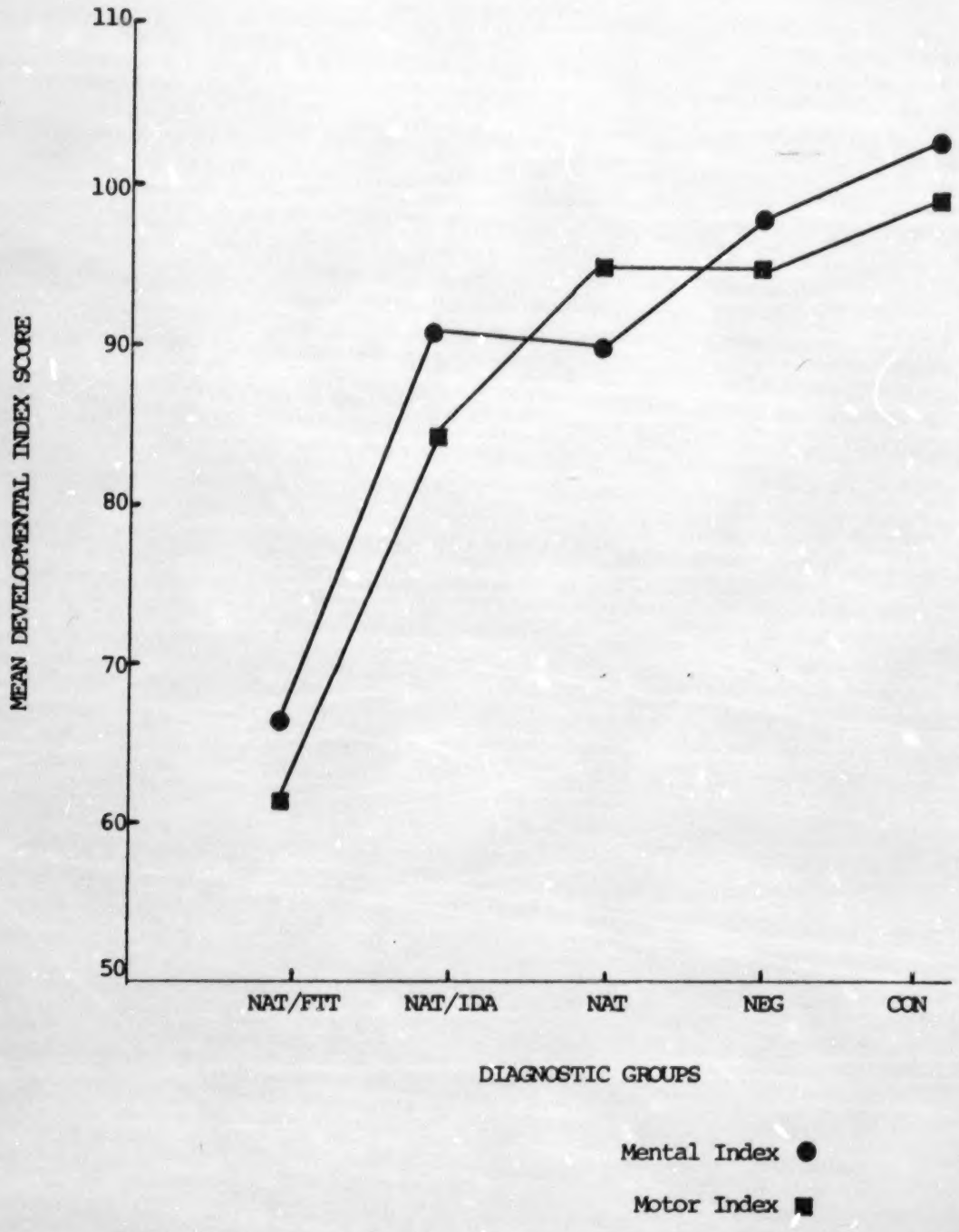

Figure 2. Mean Bayley mental and motor scores for diagnostic groups.